

PATENT

WHAT IS CLAIMED IS:

1. An apparatus comprising:
a front end adapted to receive a television signal comprising a synchronization signal representing precise timing information derived from a satellite signal; and
5 a synchronization unit adapted to obtain the precise timing information from the television signal, and further adapted to provide a clock correction signal based on the precise timing information.
2. The apparatus of claim 1:
10 wherein the satellite is a global positioning system satellite
3. The apparatus of claim 1, further comprising:
a local clock adapted to generate a precise clock signal based on the clock correction signal provided by the synchronization unit.
15
4. The apparatus of claim 3, further comprising:
an antenna adapted to receive the television signal from a transmitter of the television signal, and further adapted to provide the television signal to the front end; and
a clock offset unit adapted to provide an offset signal based on a propagation delay
20 between the transmitter of the television signal and the antenna;
wherein the local clock is further adapted to generate the precise clock signal based on the offset signal provided by the clock offset unit.
5. The apparatus of claim 4, wherein:
25 the clock offset unit is further adapted to provide the offset signal based on a tropospheric propagation velocity in the vicinity of the antenna.
6. A telecommunication switch comprising the apparatus of claim 1.

PATENT

7. The apparatus of claim 1, wherein the television signal is selected from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;
an Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal;
5 a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal; and
a National Television System Committee (NTSC), Phase Alternating Line (PAL), or Sequential Color with Memory (SECAM) analog television signal.

10 8. An apparatus comprising:
front end means for receiving a television signal comprising a synchronization signal representing precise timing information derived from a satellite signal; and
synchronization means for obtaining the precise timing information from the television signal, and further adapted to provide a clock correction signal based on the
15 precise timing information.

9. The apparatus of claim 8:
wherein the satellite is a global positioning system satellite

20 10. The apparatus of claim 8, further comprising:
local clock means for generating a precise clock signal based on the clock correction signal provided by the synchronization means.

11. The apparatus of claim 10, further comprising:
25 antenna means for receiving the television signal from a transmitter of the television signal, and further adapted to provide the television signal to the front end; and
clock offset means for providing an offset signal based on a propagation delay between the transmitter of the television signal and the antenna means;
wherein the local clock means generates the precise clock signal based on the offset
30 signal provided by the clock offset means.

PATENT

12. The apparatus of claim 11, wherein:

the clock offset means provides the offset signal based on a tropospheric propagation velocity in the vicinity of the antenna means.

5

13. A telecommunication switch comprising the apparatus of claim 8.

14. The apparatus of claim 8, wherein the television signal is selected from the group comprising:

10 an American Television Standards Committee (ATSC) digital television signal;

an Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal;

a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal; and

15 a National Television System Committee (NTSC), Phase Alternating Line (PAL), or Sequential Color with Memory (SECAM) analog television signal.

15. A method comprising:

receiving a television signal comprising a synchronization signal representing precise timing information derived from a satellite signal;

20 obtaining the precise timing information from the television signal; and

providing a clock correction signal based on the precise timing information.

16. The method of claim 15, wherein:

the satellite is a global positioning system satellite

25

17. The method of claim 15, further comprising:

generating a precise clock signal based on the clock correction signal provided by the synchronization unit.

30 18. The method of claim 15, further comprising:

PATENT

determining a propagation delay between a transmitter of the television signal and an antenna that receives the television signal; and

providing the clock correction signal based on the precise timing information and the propagation delay.

5

19. The method of claim 18, wherein determining the propagation delay comprises:

determining a tropospheric propagation velocity in the vicinity of the antenna.

10

20. The method of claim 15, wherein the television signal is selected from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;

an Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal;

a European Telecommunications Standards Institute (ETSI) Digital Video

15

Broadcasting - Terrestrial (DVB-T) signal; and

a National Television System Committee (NTSC), Phase Alternating Line (PAL), or Sequential Color with Memory (SECAM) analog television signal.

20

21. Computer-readable media embodying instructions executable by a computer to perform a method comprising:

receiving a television signal comprising a synchronization signal representing precise timing information derived from a satellite signal;

obtaining the precise timing information from the television signal; and

providing a clock correction signal based on the precise timing information.

25

22. The media of claim 21, wherein:

the satellite is a global positioning system satellite

23. The media of claim 21, wherein the method further comprises:

PATENT

generating a precise clock signal based on the clock correction signal provided by the synchronization unit.

24. The media of claim 21, wherein the method further comprises:
5 determining a propagation delay between a transmitter of the television signal and an antenna that receives the television signal; and
providing the clock correction signal based on the precise timing information and the propagation delay.

10 25. The media of claim 24, wherein determining the propagation delay comprises:
determining a tropospheric propagation velocity in the vicinity of the antenna.

26. The media of claim 21, wherein the television signal is selected from the group comprising:
15 an American Television Standards Committee (ATSC) digital television signal;
an Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal;
a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal; and
a National Television System Committee (NTSC), Phase Alternating Line (PAL), or
20 Sequential Color with Memory (SECAM) analog television signal.

27. An apparatus comprising:
a satellite time receiver adapted to receive a satellite signal from a satellite, the
satellite signal comprising precise timing information; and
25 a television transmitter adapted to generate a television signal comprising a synchronization signal based on the precise timing information, and further adapted to transmit the television signal.

28. The apparatus of claim 27:
30 wherein the satellite is a global positioning system satellite.

PATENT

29. The apparatus of claim 27, wherein the television signal is selected from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;

5 an Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal;

a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal; and

a National Television System Committee (NTSC), Phase Alternating Line (PAL), or Sequential Color with Memory (SECAM) analog television signal.

10

30. An apparatus comprising:

satellite time receiver means for receiving a satellite signal from a satellite, the satellite signal comprising precise timing information; and

television transmitter means for generating a television signal comprising a
15 synchronization signal based on the precise timing information, and for transmitting the television signal.

31. The apparatus of claim 30:

wherein the satellite is a global positioning system satellite.

20

32. The apparatus of claim 30, wherein the television signal is selected from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;

an Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal;

25 a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal; and

a National Television System Committee (NTSC), Phase Alternating Line (PAL), or Sequential Color with Memory (SECAM) analog television signal.

30

33. A method comprising:

PATENT

receiving a satellite signal from a satellite, the satellite signal comprising precise timing information;

generating a television signal comprising a synchronization signal based on the precise timing information; and

5 transmitting the television signal.

34. The method of claim 33:

wherein the satellite is a global positioning system satellite.

10 35. The method of claim 33, wherein the television signal is selected from the group comprising:

an American Television Standards Committee (ATSC) digital television signal;

an Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal;

a European Telecommunications Standards Institute (ETSI) Digital Video

15 Broadcasting - Terrestrial (DVB-T) signal; and

a National Television System Committee (NTSC), Phase Alternating Line (PAL), or Sequential Color with Memory (SECAM) analog television signal.

20 36. Computer-readable media embodying instructions executable by a computer to perform a method comprising:

receiving a satellite signal from a satellite, the satellite signal comprising precise timing information;

generating a television signal comprising a synchronization signal based on the precise timing information; and

25 transmitting the television signal.

37. The media of claim 36:

wherein the satellite is a global positioning system satellite.

PATENT

38. The media of claim 36, wherein the television signal is selected from the group comprising:

- an American Television Standards Committee (ATSC) digital television signal;
- an Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) signal;
- 5 a European Telecommunications Standards Institute (ETSI) Digital Video Broadcasting - Terrestrial (DVB-T) signal; and
- a National Television System Committee (NTSC), Phase Alternating Line (PAL), or Sequential Color with Memory (SECAM) analog television signal.